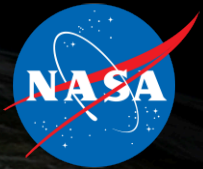


National Aeronautics and  
Space Administration



# EXPLORE EARTH

## EARTH SCIENCE TECHNOLOGY FORUM

**Karen St. Germain, PhD**  
**Director**  
**Earth Science Division**

June 23, 2020





# Who We Are

## **NASA VISION**

To discover and expand knowledge for the benefit of humanity.

## **NASA MISSION**

Pioneer advances in aeronautics, space exploration, science, and technology to transform our understanding of the universe, unlock new opportunities, and inspire the world.

## **SCIENCE MISSION DIRECTORATE VISION**

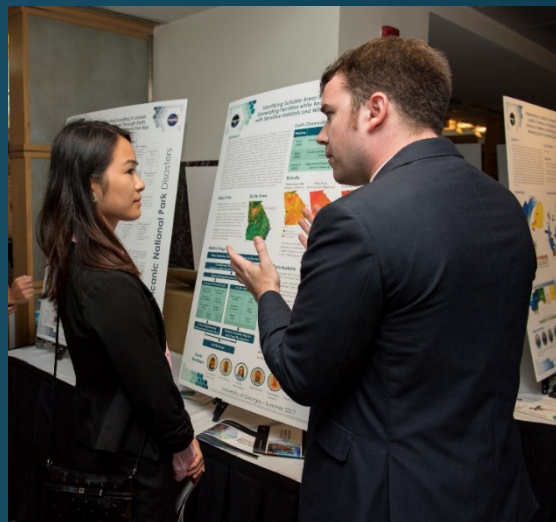
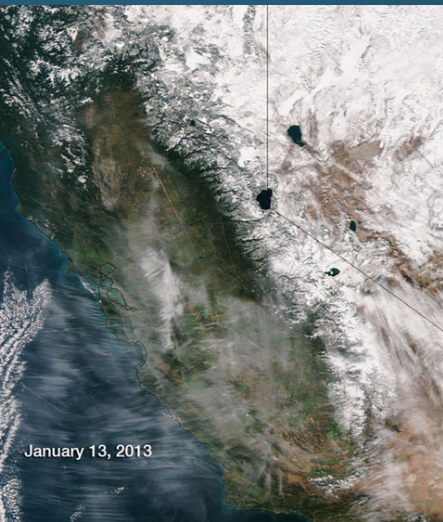
To lead a globally interconnected program of scientific discovery that encourages innovation, positively impacts people's lives, and is a source of inspiration.

# NASA Earth Science Mission: To Protect and Improve Life on Earth

Measuring

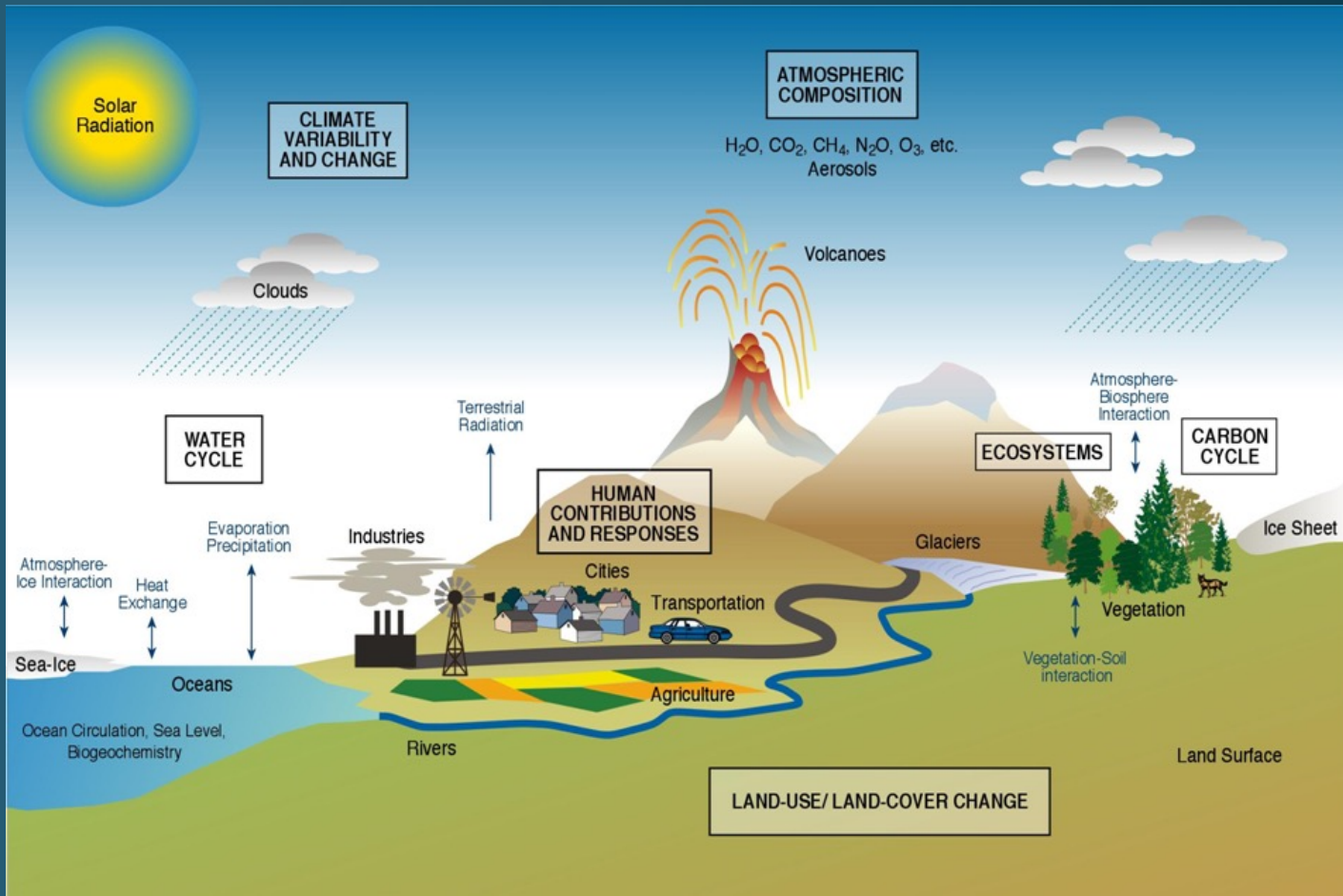
Understanding

Delivering  
Societal Benefit





# Earth as a Complex Inter-related System



NASA Earth Science advances knowledge of Earth as a system to meet the challenges of environmental change and to improve life on our planet

In parallel with research, NASA pursues innovative and practical uses of Earth science data and results to inform decisions and actions.

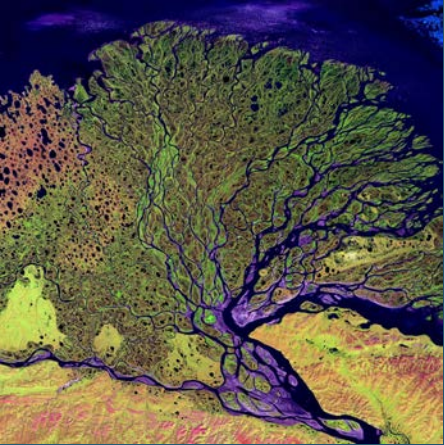
**Earth System Science:** Requires quantitative understanding of *interactions between processes* in order to define the Earth system – nonlinearities link spatial and temporal scales

# Earth Science Objective:

Advance knowledge of Earth as a system to meet the challenges of environmental change and to improve life on our planet

## Major Activities

- Develop *technology* we need to make observations
- Make the *observations* we need to “see” our earth systems
- Advance our *understanding* of the physical, chemical, and biological mechanisms and their interactions
- Bridge to decision-makers so they can *apply* understanding to improve life on our planet





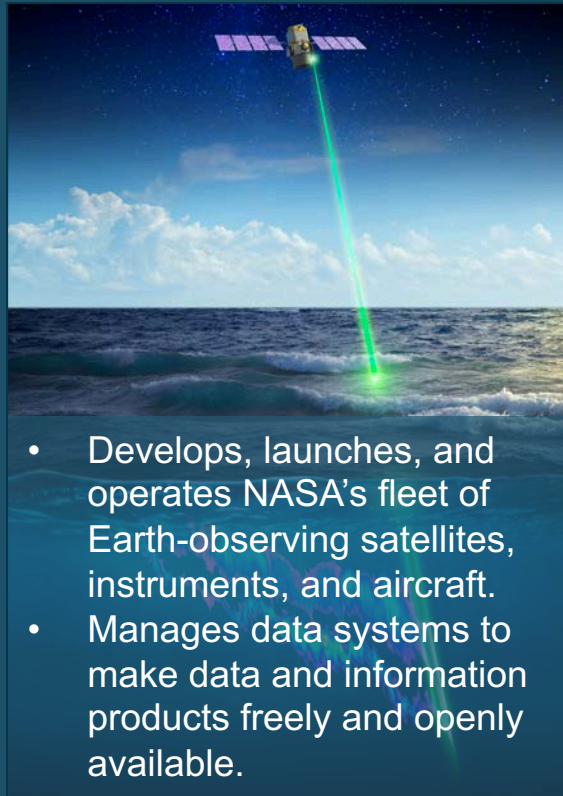
# NASA Earth Science Division Elements

## Technology



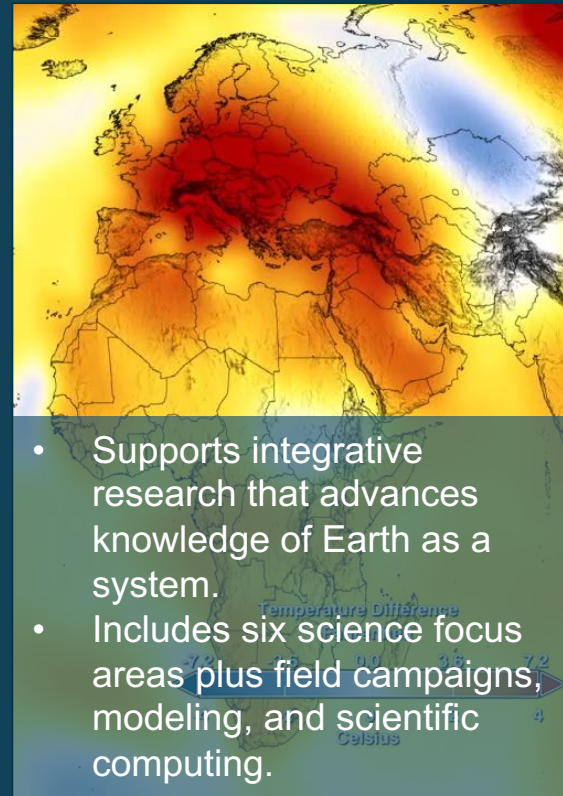
- Develops and demonstrates technologies for future satellite and airborne missions: Instruments, Information Systems, Components, InSpace Validation (CubeSat and SmallSat form factors).

## Flight *including Data Systems*



- Develops, launches, and operates NASA's fleet of Earth-observing satellites, instruments, and aircraft.
- Manages data systems to make data and information products freely and openly available.

## Research & Analysis



- Supports integrative research that advances knowledge of Earth as a system.
- Includes six science focus areas plus field campaigns, modeling, and scientific computing.

## Applied Sciences



- Develops and supports use of Earth observations and scientific knowledge for public and private planning and decisions.
- Activities include disaster response support and capacity building.

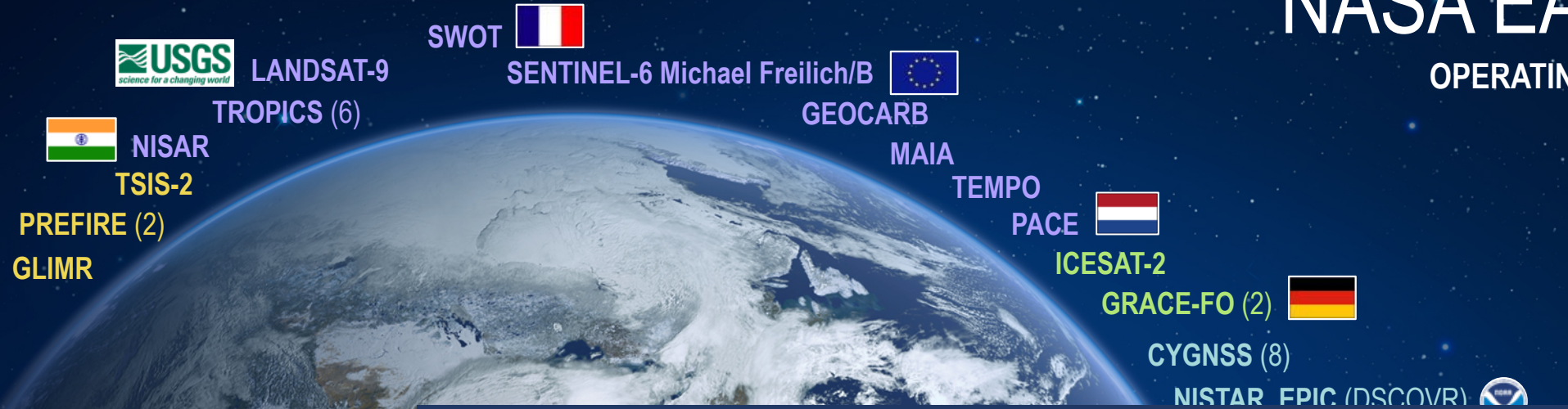
# Science Leadership Priorities





# NASA EARTH FLEET

OPERATING & FUTURE THROUGH 2023




## What's Next ?


### ISS INSTRUMENTS

EMIT  
CLARREO-PF  
GEDI  
SAGE III  
OCO-3  
TSIS-1  
ECOSTRESS  
LIS


### JPSS-2, 3 & 4 INSTRUMENTS


OMPS-Limb 

AURA   

CALIPSO 

GPM 

LANDSAT 7 

LANDSAT 8 

OCO-2

SMAP

SUOMI NPP  

### INVEST/CUBESATS

RainCube  
CSIM  
CubeRRT  
TEMPEST-D  
CIRiS  
HARP  
CTIM  
HyTI  
SNoOPI  
NACHOS

(PRE) FORMULATION ●  
IMPLEMENTATION ●  
PRIMARY OPS ●  
EXTENDED OPS ●